Phillips Quadrangle, Maine

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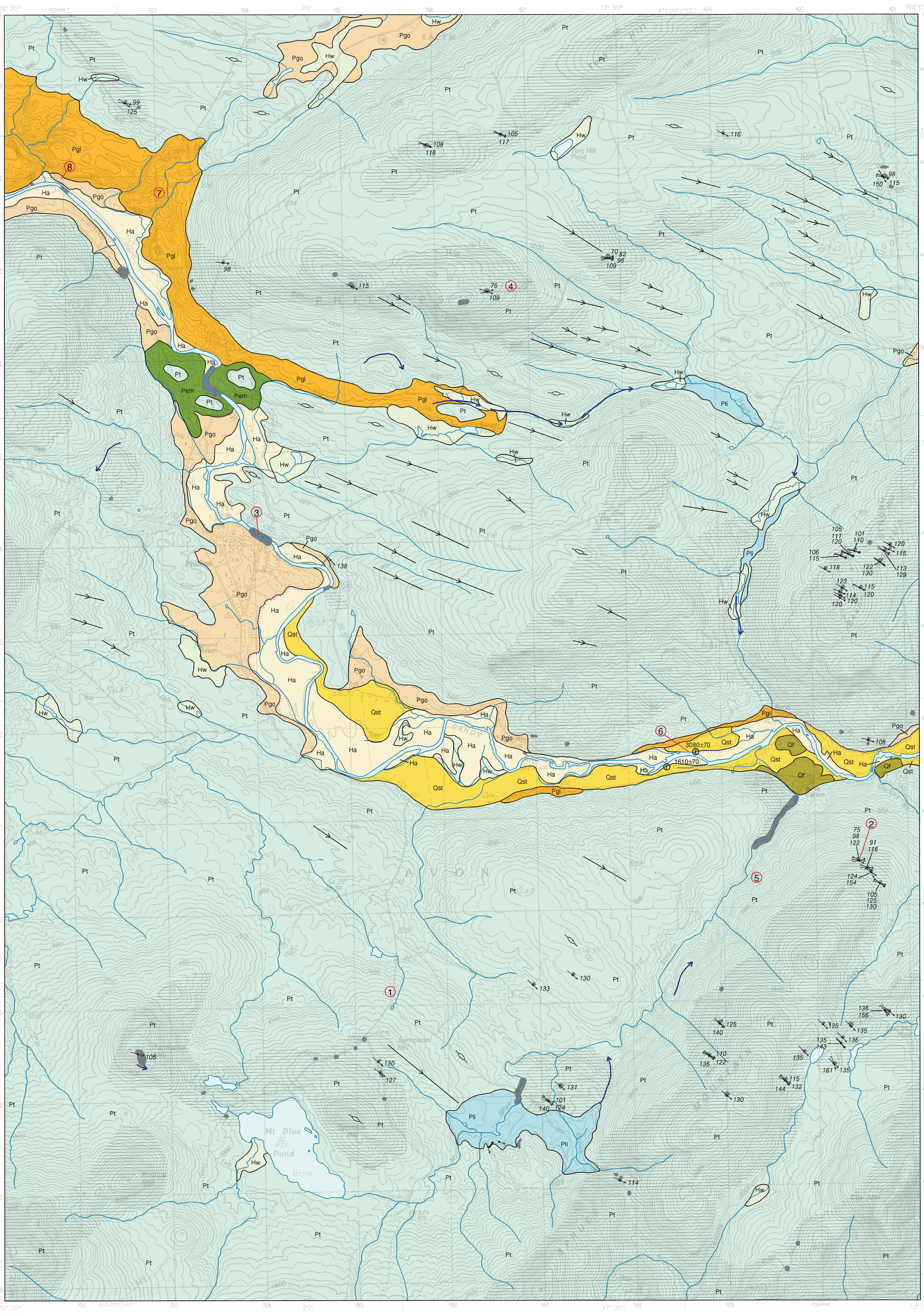
Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by Kent M. Syverson and Rachel M. Greve during the 2002 field season; funding for this work provided by the U.S. Geological Survey STATEMAP program and the Maine Geological Survey, Department of Conservation. Additional data and editing by Thomas K. Weddle from field work conducted in 1990 and 2003.

Quadrangle Location

SCALE 1 : 24,000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Phillips quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

Ha — **Stream alluvium** - Sand, gravel, silt, and organic sediment. Deposited on flood plains of modern streams. Unit may include some wetland areas.

Hw — **Wetland sediment** - Peat, muck, silt, and clay. Deposited in poorly drained areas.

Qf — **Alluvial fan deposit** - Small fan-shaped deposits of variably sorted sand, gravel, and mud built by ephemeral or small streams where they emerge from steep slopes onto flat plains or into swamps.

Qst — **Stream terrace deposit** - Sand, silt, gravel, and occasional muck on terraces cut into glacial deposits of the Sandy River valley and its tributaries. The highest elevation stream terraces are most likely Pleistocene age and may have had a glacial meltwater source.

Pgo — **Outwash sediment** - Sand and gravel. Outwash deposited by meltwater streams in gently sloping surfaces above the modern stream flood plains.

Pgi — **Ice-contact sediment** - Sand and gravel, may be interbedded with sandy silt, commonly displays contorted bedding. Deposited by streams above or adjacent to stagnant ice. Locally collapsed and kettled from the melting of stagnant ice.

Pli — **Lake sediment** - Sand, gravel, and silt deposited in short-lived ice-dammed lakes. Sand and gravel deposited near the shore, and lake-bottom silt deposited farther from shore.

Pem — **End moraine complex** - Area of sandy diamicton with numerous boulders on the surface of and adjacent to glacially streamlined hills; the deposit includes stratified sand and gravel in places.

Pt — **Till** - Loose to very compact, poorly sorted, massive to weakly stratified mixture of sand, silt, and gravel-size rock debris deposited by glacial ice. Locally includes lenses of water-laid sand and gravel.

Bedrock outcrops / thin drift areas - Ruled pattern indicates areas where outcrops are common and/or surficial sediments are generally less than 10 ft thick (mapped partly from air photos). Solid gray areas show individual outcrops.

Contact - Boundary between map units.

Glacially streamlined hill, oval hill - Symbol shows trend of the long axis, which is parallel to the former ice-flow direction.

Flute. Narrow, glacially streamlined ridge. Symbol shows length and trend of the long axis, which is parallel to the former ice-flow direction. Arrowhead indicates former ice-flow direction.

135 — **Glacial striation locality** - Arrow shows ice-flow direction inferred from striations on bedrock. Dot marks point of observation. Number is azimuth (in degrees) of flow direction. Flagged trend is older.

Dip of cross bedding - Arrow shows average dip direction of cross-bedding in fluvial or deltaic deposits, which indicates direction of stream flow or delta progradation. Point of observation at tip of arrow.

Meltwater channel - Channel eroded by glacial meltwater stream. Arrow shows inferred direction of former stream flow.

Stream-cut bank - Scarp caused by river erosion. Hatch marks point to the lower surface.

10,150±450 (f) — **Non-marine fossil locality.**

(4) — **Photo locality.**

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Syverson, K. M., and Greve, R. M., 2003, Surficial geology of the Phillips 7.5' quadrangle, Franklin County, Maine: Maine Geological Survey, Open-File Report 03-48, 12 p.
2. Locke, D. B., Syverson, K. M., and Greve, R. M., 2003, Surficial materials of the Phillips quadrangle, Maine: Maine Geological Survey, Open-File Map 03-46.
3. Neil, C. D., 2003, Significant sand and gravel aquifers of the Phillips quadrangle, Maine: Maine Geological Survey, Open-File Map 03-55.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print).
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.